

## **ACHEMA: Q.ANT optimizes Process Technology with the World's first Quantum Particle Sensor**

At this year's ACHEMA (Hall 11.0 Booth F50), the start-up Q.ANT is exhibiting the world's first industrial-grade quantum sensor as a particle sensor. This can simultaneously measure three parameters in real-time. An artificial intelligence (AI) analyzes the measured parameters and classifies the particles according to their shape. This allows optimized and sustainable operation of plants in chemistry and biotechnology.

Stuttgart/Frankfurt, 09.08.22 - At ACHEMA, the leading international trade fair for the process industry, the start-up Q.ANT will showcase the first industry-ready particle sensor based on quantum technology. The sensor generates far more data on the measured particles in different media than currently available measurement methods. This sensor analyzes particles in different gases as well as in liquids or powders. The online integration of the sensor, thus, allows process control in real-time and increases the productivity of the plant as well as the quality of the processed media. The resulting avoidance of faulty production, which goes hand in hand with reduced energy consumption, also makes the particle sensor interesting from a sustainability point of view. With the quantum sensor, continuous processes achieve the flexibility of batch production. Since there is often a risk of explosion during powder processing, Q.ANT is also working on an ATEX version (ATmosphères EXplosibles, explosive atmospheres).

### Versatile Quantum Technology

During the measurement, a quantum-modified laser beam shines through the flowing medium and its particles. "As the particle moves through the laser beam, high-frequency scanning generates a characteristic pattern that can be used to simultaneously analyze particle size, position and velocity. The AI then classifies the signals according to our customers' specifications, as for example particle form", Andreas Schürzinger, Product Line Manager for the particle sensor at Q.ANT, states.

The AI must first be trained for the respective use case. Parallel to this, Q.ANT is building up a database of use cases in order to be able to draw on information already gained and to shorten the training of the AI. "Interested companies can also rent the particle sensors to test them on their applications and adapt them to their use cases", Andreas Schürzinger says. For this purpose, Q.ANT offers an evaluation program with training courses and training sessions.

### Adaptable Measuring Ranges

The particle sensor can be configured for many different applications, including other measurement methods and measurement mechanisms. Simple web-based software interfaces make it user-friendly.

"For lab environments, repeatable analysis is possible, where data is exported, stored and securely transferred to lab systems or the cloud. A browser is all that is needed for operation here. The device does not require a display or buttons. Analyses can run automatically in the online environment. In the event of changes beyond defined threshold values, there are automated messages, e.g. via MQTT interface, for process control. A cloud connection is also possible here", Schürzinger says.

The number of possible applications is versatile. Thanks to AI, the sensor remains constantly up-to-date and is adaptable to applications that no one is thinking of today. This makes the particle sensor a real investment in the future. "Our visit to ACHEMA clearly shows how far quantum sensors can already be used industrially. For us at Q.ANT, this is the prelude to a whole series of applications with quantum technologies, which we will bring to market maturity in the next few years", Q.ANT CEO and Founder Michael Foertsch emphasizes.

### About Q.ANT

Q.ANT is a high-tech startup founded in 2018 as part of the TRUMPF Group. Q.ANT's vision is to revolutionize the quality of how machines analyze their environment, people notice information, and the way humans think. To this end, Q.ANT develops quantum sensors and quantum computer chips based on its Photonic Quantum Framework.

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